

short, with a straight hind-border; fourth, fifth and sixth of moderate size, with straight hind-borders; seventh extremely small: middle-legs not dilated.

In other characters it resembles the male.

Found by Mr. Haliday with the ♂ on mountain heaths near Belfast, both pretty common.

Ericydnus Æmnestus, fem. *Viridis, antennis nigris, abdomine basi pedibusque rufis, alis vix ullis.*

Head and chest dark green, shining, convex, very finely sha-greened: head broader than the chest; crown large; front convex: eyes and eyelets dark red: feelers black, clavate, much shorter than the body; first joint long, slender; second long cup-shaped; third and following joints to the ninth successively shorter and broader; tenth, eleventh and twelfth joints forming a spindle-shaped club which is more than twice the length of the ninth joint: chest elliptical: fore-chest short, narrower in front: scutum of the middle-chest short and broad; scutellum obconical: abdomen sessile, convex, dark green, obconical, pale red towards the base, narrower and much shorter than the chest; there are a few hairs towards the tip which is deeply keeled beneath: legs pale red; middle legs dilated as usual, their shanks armed with long spines; hind-shanks rather dark; tips of the feet brown: wings rudimentary. Length of the body $\frac{2}{3}$ line. *E. strigosus* ♀?

Ireland. In Mr. Haliday's collection.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

Feb. 27, 1849.—William Yarrell, Esq., Vice-President, in the Chair.

The following papers were read:—

1. DESCRIPTION OF TWO NEW SPECIES OF CYPRÆA.

BY JOHN S. GASKOIN.

CYPRÆA CRIBELLUM. *Cyp. testâ subcylindricâ, lævi, albâ, bruneo omnino obtectâ, præter maculis numerosis, testâ concoloribus, ferè circularibus, inæqualibus et irregulariter dispensatis; marginibus bruneo-rufescente punctatis; basi subplanulatâ, albâ; aperturâ latâ, præcipuè anticè; columellâ ventricosiusculâ; dentibus labii prominentibus, æqualibus, circa quindecim; dentibus columellaribus subobsoletis (præter dente primo) circa duodecim; dente primo majus prominente deinde anticè est incisura profunda; sulco columellari nullo, extremitatibus anticis leviter productis, externè valdè convergente; canali lato et profundo; extremitatibus posticis obtusis; canali postico lato, aperturâ rectè continuo; margine externo incrassato; spirâ latè umbilicatâ.*

Shell subcylindrical, smooth, white, covered by a dark-brown coating except at numerous nearly circular white spots, of unequal sizes and irregular distribution, thus leaving at those spots the colour of the

shell to view; the line of meeting of the two mantles of the mollusc on the dorsum is generally perceptible; internally of a brown colour; outer edge of the margin more or less dotted with rather large dark reddish-brown dots, similar dottings, but less in degree, on the columellar side of the base; base rather flat, white (white deposit, on the centre of the columellar side, semitransparent); aperture wide, especially anteriorly, inner edge of the lip spiral; columella slightly ventricose; teeth on the lip prominent, even, extending partly on to the base, about fifteen in number, those on the columella very slightly prominent (excepting the first), not extending on the base,—about twelve in number; the first greatly projects, between which and the inner anterior extremity is a deep notch,—no columellar groove,—and at the posterior half of the aperture the teeth exist along the outer, those on the inner edge being mere indications of teeth; extremities, anterior very slightly produced, the outer one converging greatly; posterior extremities obtuse, very slightly produced; channels, anterior wide and deep, posterior rather wide and in a straight line with the aperture; margin, only on the outer side, incrassated; spire widely umbilicated.

Long, $\frac{14}{10}$ of an inch; wide, $\frac{9}{20}$ of an inch.

Hab. Mediterranean Sea.

Cab. Gaskoin, Saul, &c.

This species differs from *Cypræa Cribraria* of Linn. in the general conformation of the shell, being more cylindrical, in its short, obtuse extremities, its wide aperture, particularly anteriorly, the large dottings on the margin, the character of the teeth, the internal colour of the shell, &c.

CYPRÆÆ PULICIS VARIETAS. *Cyp. testâ longiore, dentibus numerosioribus minutioribusque, supra labrum circa viginti-novem, supra columellam circa viginti-tribus; canali postico denticulato.*

Shell longer in form, of a light reddish-brown colour, aperture narrower and straighter, teeth finer and much more numerous than the ordinary form, being about twenty-nine on the lip, while the prototype has about nineteen, and on the columella side, about twenty-three, against from fourteen to seventeen; posterior channel more or less denticulated.

Hab. —?

Cab. Cuming, Gaskoin.

2. DESCRIPTION OF A NEW SPECIES OF NUTCRACKER.

BY JOHN GOULD, F.R.S. ETC.

NUCIFRAGA MULTIPUNCTATA, *Gould.*

Crown of the head and nape of the neck brownish black; feathers of the face, sides of the neck, back, chest and abdomen brownish black, with a broad and conspicuous mark of dull white down the centre; wings glossy greenish black, the coverts and secondaries with a lengthened triangular mark of white at the tip, a faint trace of a similar mark appearing on the tips of the primaries; tail glossy greenish black, the two centre feathers slightly, the next on each side more

largely, and the remaining three extensively tipped with white, the extent of the white increasing as the feathers recede from the centre; under tail-coverts white; upper tail-coverts and thighs striated with white.

Total length, $14\frac{1}{4}$ inches; bill, $1\frac{7}{8}$; wing, $8\frac{3}{4}$; tail, 7; tarsi, $1\frac{5}{8}$.

This species exceeds in size both the *N. caryocatactes* and *N. hemispila*, but at the same time has a smaller and more slender bill than either of those birds; it also differs from both of them in its lengthened and cuneiform tail; it has a greater quantity of white on the apical portion of the tail-feathers than the European species, but less than is found in the *N. hemispila*; the white markings of the back and the entire under surface are also much larger and more numerous than in either of the other species, and are most remarkably developed on the scapularies.

The only specimen I have seen of this fine species is in the Museum of the Philosophical Society at York; its precise habitat is unknown, but as other species which were certainly from Simla in India accompanied it, we may reasonably conclude it was from that country.

3. NOTES ON THE DISSECTION OF THE PARADOXURUS TYPUS, AND OF DIPUS ÆGYPTIUS. BY H. N. TURNER, JUN.

Having received, through the liberality of the Society, a few of the animals that have died in the menagerie in the course of the present winter, I feel bound to lay before them, as well as I may be able, whatever details of structure I observe which may be new, or may give rise to ideas calculated to assist in the advancement of the science. Since the Society have done me the honour to insert in their Proceedings* the somewhat lengthened communication which I was last permitted to lay before them, I hope that the remarks I have now to offer, some of which have a bearing on the same subject, may also prove acceptable.

It formed part of my object in that paper to demonstrate that the Viverrine group, (of which the Paradoxuri are now universally admitted to form a part,) are so closely allied to the Cats as to safely warrant their being united with them in one family, instead of being looked upon as a section intermediate to the canine and feline groups, or, on account of their number of tuberculous molars, more closely allied to the former, in which light they have very frequently been considered: and I think it will be apparent, from the observations I have now to bring forward, that the genus *Paradoxurus*, one of the least exclusively carnivorous of the order, and formerly associated with the Bears in the plantigrade division, has a much closer relationship with the group, which, from its being pre-eminently carnivorous, is usually considered as "typical" of the order, than naturalists have been wont to anticipate. It is not unfrequently the case, that when an affinity between two species or genera is established upon essential peculiarities of structure, certain minor details, or even habits and actions of the animal, remind one so forcibly of the relationship we

* See also vol. iii. p. 397 of this Journal.

have already proved to exist, that they assume an unlooked-for degree of interest; and, having kept for some time a living specimen of the common *Paradoxurus*, I think a few of the observations I have made upon it may on this account be interesting, in connection with the structural peculiarities which the receipt of a dead one has enabled me to remark.

The claws are as retractile as in the domestic Cat, although from the absence of the long and soft hair, with which the sides of the toes are clothed in the latter animal, they are fully exposed when in the retracted position. But on examining the claws of the *Paradoxure*, it becomes obvious that the raising of the point from the ground is not the only means employed by Nature to maintain their sharpness. Every one must have observed in the common Cat, as well as in the larger species preserved in our menageries, the habit of occasionally scratching or dragging with the claws against the surface of any hard substance, a process not apparently calculated to improve their sharpness, but obviously intended to aid the shelling off of the outer layer of the claw, which is continually renewed by growth from the root, and the blunted point is thus occasionally replaced by a new one. I have not observed this habit in the living *Paradoxurus*; but on examining the claws of the dead one, I noticed that some of them were much larger than others, these being worn and blunted at the point, while the smaller ones were sharp; also that the series of claws on each foot were irregular as to their sizes, and that the corresponding claws on the opposite feet in some cases differed greatly in size; so that it would appear, that in the absence of the scratching propensity, the claws scale off naturally, and to a much larger extent at a time than in the Cats. I have occasionally noticed my living specimen with a claw apparently loose, but the casting off of the outer layer of the nail is a difficult thing to verify by actual observation.

On one occasion, my specimen having escaped from his cage, on my seizing him by the neck for the purpose of replacing him therein, he made use of his claws to defend himself, just as a cat would naturally be expected to do; while it is well known that any animal of the dog tribe, being seized in that manner, is helpless, having no instinct prompting him to make use of his extremities against his captor; in this tribe also the paws are never used for seizing, but only for the purposes of locomotion, and to steady the prey upon the ground, while the teeth perform their office. The positions sometimes assumed by the *Paradoxurus* in a state of repose, also resemble those of the cat; for instance, it frequently lowers the body between the fore-paws, approximating the shoulder to the foot, while the elbow remains raised by the side: the canine animals, on the other hand, *never* crouch without applying the elbow to the ground. The *Paradoxurus* again resembles the Cat in the habit of occasionally bending the head vertically beneath the neck while asleep, a position never assumed by the Dog.

In all the anatomical characters which in my former communication I assigned to the Felidæ (in which family the viverrine section is included), the *Paradoxurus* fully agrees; those presented by the gene-

rative and odoriferous organs are the most remarkable. There is no true musk-bag, simply the two secerning pouches situated one on each side the anus, which are so common among the carnivora. In addition to these, there is at the base of the prepuce, an oval, flat, naked space, which is not simply a secreting surface, as stated by Mr. Gray in a paper contributed to the Proceedings a few years back, but contains a number of minute orifices, each opening into a somewhat cylindrical glandular sac: these are arranged vertically side by side, and, together with the anal pouches, secrete the substance which imparts to the animal its characteristic odour. The generative organs are altogether very largely developed; the prostate is large, of a slightly lobulated form; and the urethra passes obliquely through its centre. Cowper's glands, whose presence is characteristic of the Felidæ, are remarkably large, causing a prominence externally posterior to the scrotum; and, as usual in the family, each is surrounded by a powerful muscular envelope, which is at least an eighth of an inch in thickness; the fibres converge to a tendinous portion, which extends, from the point where the duct issues, some distance on each side of the gland; the size of these organs altogether is about equal to that of the testes. The length of the penis, from the orifices of Cowper's duct to the meatus urinarius, is a little more than three inches; it is perfectly flexible in every part, and therefore the os penis must be either very minute or wanting; this is another feline character, since in the Bears and Weasels, as well as in the Dogs, the bone forms a considerable part of the organ. The glans is cylindrical, it tapers a little for about six-tenths of an inch, then terminates suddenly in a small conical point, in the groove around the base of which is situated at the lower part the urethral orifice. The body of the glans has a slight median groove beneath, and its whole surface is covered with horny spines directed backwards. Cuvier, who alludes to a similar peculiarity in the Cats, makes no mention of it, either in the Ichneumon, the Civet, or the Hyæna. Its existence is therefore an interesting mark of affinity between two genera apparently so dissimilar, although, from its inconstancy, it will not serve as a character of the family. In the *Paradoxurus* the spines are minute, very numerous, and regularly distributed*.

The same organs in the *Jerboa* present some peculiarities worthy of notice. I will observe, in addition to what has before been described, that Cowper's glands are each curved upon itself in a manner similar to the vesiculæ seminales. The two sharp-pointed bony stylets with which the upper part of the glans is armed, and which have been mentioned by authors, arise about the middle of the dorsum of the glans, one on each side of a prominence of its substance; they are

* Since the above was written, I have received the body of a male *Coatimondi*. I alluded to that animal in my former paper, as being placed by Cuvier among the list of those possessing the vesiculæ seminales, which, I observed, required confirmation. I can now assert that they do not exist; the walls of the vasa deferentia are swollen immediately before these vessels enter the urethra, and the prostate has a more sudden projection at its upper end than I have observed in the musteline animals that I have dissected. The absence of the vesiculæ seminales is then a constant character of the true Carnivora.

gently curved, and rather suddenly pointed at the end. In the recumbent condition they incline a little towards each other, just overhanging the extremity of the glans, and bear some resemblance to the pointed lower incisors of some small Rodent. The glans itself appears tripartite at the extremity, there being a deep fissure running the whole length of its under surface, and just at the extremity another on each side: at the meeting-point of the fissures is the urethral orifice. Just behind the origin of the bony stylets the presence of a small ossicle can be distinctly felt within the substance of the glans.

A very remarkable peculiarity in this little animal is, that amidst the long white hairs which clothe the lower part of the foot is a small sharp horny spike, situated just below the base of the middle toe, as if it were intended to enter the ground, and thus prevent the animal from slipping when it alights. This I have reason to believe is not generally known, although it must I think be alluded to by Dr. Shaw in his *General Zoology*, since he there remarks, "There is also a very small spur or back-toe, with its corresponding claw:" and subsequently adds, "nor does any vestige of it appear in the figure given by Dr. Pallas of the skeleton." This may well be, since it is simply a cutaneous development, having no connection with the skeleton whatever. I have looked at the specimens of the Jerboa in the British Museum, but in consequence of their being dried and mounted, the little appendage, which is concealed by the hair, was not to be perceived; but in the *Alactaga*, as well as the same circumstances would permit, I could see that a little horny process existed, but was rough and blunt.

In the dissection of an animal whose only mode of progression consists of leaping with the hinder extremities, and which differs from the other jumping Mammalia in the circumstance, that in the position of rest the extremity only of the metatarsus is applied to the ground, the muscles of the leg may be expected to afford some points of interest. The most striking of these are, that none of the muscles situated upon the tibia remain fleshy for more than about half the length of that bone, each terminating in a long tendon; and that upon the foot itself there are no muscles whatever, the actions of the flexors of the toes being relieved by a strong ligament, which arises from the os calcis, and divides into five, giving one to the middle toe, two small sesamoid bones being developed in it; and two divisions to each of the other toes, the index and the annularis, each of which has also its sesamoid bones, those furthest from the axis of the foot being rather largely developed, extending some distance over the sides of the articulation. The ligament near its origin contains three little supernumerary bones, one on the outer, two on the inner side; the latter are grooved for the passage of the tendon of the flexor perforans. On the homology of this tendon I have next to remark. It might very naturally be expected, that in animals having no thumb on the hinder extremity, and in which the fibula is in great part wanting, the flexor longus pollicis, which in man has its origin in the fibula, would be either much reduced or absent; but so far from such being the case, it will be seen, on reference to any work on the comparative anatomy of the muscular system, that this muscle exists, and that its tendon

becomes entirely confluent with that of the flexor longus digitorum. But further, I think it will appear that in those lower Mammalia, in which the thumb or the fibula, or both, are wanting or imperfectly developed, it is the flexor longus digitorum that is reduced in size, and the flexor longus pollicis that becomes the principal muscle acting on the toes. The dissection of the Jerboa made this homology very evident. The large flexor muscle which gives the perforating tendons to the toes arises, as may be expected, partly from the tibia as well as from the fibula; but it is distinctly shown to be the flexor longus pollicis, from the fact that its tendon passes through a distinct sheath, separate from and posterior to that which contains the tendons of the other two muscles, namely the flexor longus digitorum and the tibialis posticus. Of these, which are both very small, the former shows its homology most clearly, by arising from the surface of the tibia, immediately below the insertion of the popliteus. The tibialis posticus is an extremely minute and delicate muscle, arising only from the tibia.

In the Rabbit the two perforating flexors form a single muscle, having the proper origins of both; lower down they become to a certain extent separable, but the tendons are completely reunited *before* they pass the ankle, which they do in the place belonging to the flexor longus pollicis. This compound muscle, occupying the whole posterior surface of the bones of the leg, so pushes round the tibialis posticus, that it takes the chief part of its origin from the inner side of the tibia, which in Mammalia generally is free from muscular attachment. In the Paradoxurus I found that the flexor longus digitorum has, in addition to its usual attachments, a point of origin in the head of the fibula; but then the bones are separate, and the flexor longus pollicis is a distinct muscle, having also origin in both bones, and each tendon passes the ankle in its usual place*.

March 13.—W. Yarrell, Esq., Vice-President, in the Chair.

The following papers were read:—

1. NOTICE OF A PECULIARITY OF STRUCTURE OBSERVED IN THE AORTA OF THE WILD SWAN. BY JOHN DAVY, M.D., F.R.S. L. & E., INSPECTOR-GENERAL OF ARMY HOSPITALS, ETC. (COMMUNICATED BY MR. GULLIVER.)

When engaged in examining anatomically this bird (a full-grown female, killed in the neighbourhood of Chatham in February 1839), my attention was arrested by a peculiar appearance in the inferior

* Since writing the above I have taken opportunities of looking at the same muscles in a Fox and in a Monkey (*Cercopithecus pygerythrus*). The former animal differed from the Paradoxurus, and resembled the Jerboa, in the great extent of the flexor longus pollicis and the much-reduced size of the tibialis posticus, which here also terminates in a long slender tendon, showing an interesting correspondence of *adaptive* character in two animals, in which the motion of the hind-limbs is vigorous, but of one kind only. In the Monkey the flexor longus pollicis is a much larger muscle than the flexor longus digitorum, and has considerable attachment to the tibia.

Meckel and Cuvier allude to the union of the two long flexors in the Rabbit before they pass the ankle, but neither author informs us at which point that takes place.

portion of its aorta, which I shall briefly describe with the hope of leading to further inquiry. Before the ischiatic arteries are given off, the aorta is comparatively large and is enveloped externally in a dense fibrous coat, possessing very little elasticity: below the origin of these arteries, the trunk of the aorta suddenly becomes small, and continues small and tapering to its termination; and this change is accompanied with an alteration in the structure of its external coat. In place of a dense fibrous envelope, it is now sheathed in a substance very like muscular fibre, and which from its properties I believe to be a muscular layer. It is of some thickness, of a reddish hue, slightly elastic, easily broken, and divided by a ligature and easily separated into longitudinal fibres of considerable length. Under the microscope each filament appears to be composed of nearly parallel fibres of extreme delicacy, and destitute of those peculiar markings which belong to the fibres of the voluntary muscles generally and to some of the involuntary. Moreover, when placed in a warm damp atmosphere, at a temperature between 80° and 90° Fahr., it rapidly putrefies and is reduced to a poultaceous or semifluid consistence. These properties seem to characterize it as a muscular structure; I would not dwell on any one in particular, but rather on the assemblage of them. An attempt of late has been made to revive the old doctrine of the muscularity of the middle coat of the arteries, founded almost exclusively on microscopical appearances. The structure described above, I consider not of the nature of the middle arterial coat, believing that that coat is not truly muscular, but rather of the nature of the muscular coat of the intestines, to which, in point of colour, consistence, the effect of a ligature, its microscopical appearance and proneness to putrefy, it is so very similar.

If this structure be admitted to be muscular, it may be viewed as accessory and of a use similar to that of the accessory hearts of the Chimæra and Torpedo, and destined to some peculiarity of function which further research is required to determine.

Before concluding this notice, I may mention incidentally that I availed myself of the opportunity afforded by this Swan to examine the air contained in its osseous air-cells. I found it to be composed of about 83·3 per cent. azote, and of 16·7 per cent. oxygen, tested by means of lime-water and phosphorus. It was collected from the cells belonging to the cervical vertebræ,—cells by means of which this part of the bird is happily buoyant, floating in water, even when deprived of its feathers and integuments and detached from the trachea. And, further, I may mention, which was new to me, that its large intestine is almost as amply provided with villi as its small; and that even the isthmus or narrow neck of each of its large cæca is similarly provided with villi. Some other animals, especially birds, may be analogous in this respect; but in no other instance in which I have yet examined the large intestines in search of villi have I found them.

2. NOTES ON THE SKULL OF *EQUUS HEMIONUS* AND *EQUUS KIANG*. BY J. E. GRAY, ESQ., F.R.S.

Mr. Hodgson has lately sent to the British Museum three specimens of the Horse, which he had described under the name of *Equus*

Kiang; unfortunately they were so destroyed by insects during their passage from India, that it was impossible to preserve any part of them except the skull and the bones of the limbs.

As a doubt had arisen as to the distinction of this species from the Hemione, *Equus Hemionus*, of Kutch, I have compared these skulls with the skull of the latter belonging to an imperfect skeleton, which was kindly presented to the Museum, with the skin, by the Earl of Derby, from an animal which lived some time in Knowsley Park.

The forehead of all the three specimens of *E. Kiang* is rather convex between the eyes, and the centre of the face is narrow and keeled on the sides; while in the skull of *E. Hemionus* the forehead is flat between the eyes, and the centre line of the face is rather broader and rounded gradually off on the sides, and the incisive bone is longer and more gradually arched, making the incisor more perpendicular in the latter than in any of the former.

But the most distinctive character between the four skulls is in the position of the infraorbital foramen. In *E. Hemionus* it is high up, about one-third the space between the face-line and the back edge of the teeth; it is far back, being directly over the front end of the cheek-ridge and the back edge of the third grinder: while in all the three specimens of the skulls of *E. Kiang* this foramen is lower down, being nearly in the centre of the space between the face-line and the base of the teeth, and it is placed in a line over the back edge of the second grinder, some distance in front of the end of the cheek-ridge.

The under surface of the body of the posterior sphenoid is narrow and convex in *E. Hemionus*, and broad and flat in *E. Kiang*. The vomer is much more compressed in the latter than in the *E. Hemionus*.

I am not certain that the distinctions here described may be sufficient to show that these two animals are separate species, but they indicate the necessity of the subject being more fully examined.

In the position of the suborbital foramen the *E. Kiang* more nearly resembles the *E. asinus*, and the *E. Hemionus* that of *E. Zebra* and *E. Burchellii*.

Two of the skulls of the *E. Kiang* show the small rudimentary grinder in front of the other; but this tooth is to be more or less distinctly observed in the skulls of the other *Equidae* in the Museum collection. I may observe, that in the skull of *Equus Burchellii* in the British Museum collection, this tooth is placed on the inner side of the first true grinder.

3. DESCRIPTION OF THE ANIMAL OF TRIGONIA, FROM ACTUAL DISSECTION. BY G. HUXLEY, ESQ., R.N., WITH AN INTRODUCTORY NOTE BY PROFESSOR E. FORBES, F.R.S. ETC. ETC.

The accompanying account of the animal of *Trigonia* was forwarded to me by Mr. Huxley, Assistant-Surgeon to the Rattlesnake, now surveying in the Eastern and Australian Seas, under the able command and scientific zeal of Capt. Owen Stanley.

The great number, beauty and geological importance of the species

of this interesting genus have made especially valuable a knowledge of the structure of its animal. Quoy and Gaimard were the first to give any account of it, and a figure and description of the animal of *Trigonia* were published from their drawings and notes in the zoological division of the Voyage of the *Astrolabe**. Since then I am not aware of this curious creature having been re-observed, though much has been written respecting its systematic position. As in such a case a verification of the evidence we possess, through a new and accurate set of observations, is of almost as much importance as the description of an unobserved animal, the Zoological Society may consider Mr. Huxley's notes in the light of a valuable contribution to malacology.

Both accounts confirm the idea suggested by the shell of its position among the *Arcaceæ*, and its close affinity with *Nucula* and *Arca*. The degree of union of the mantle-lobes, and the development of siphonal tubes in this family, as among the neighbouring *Mytilidæ*, is of generic and not sectional significance.

I add the description of the animal given by the French naturalists for comparison:—

“L'animal a le manteau ouvert dans les trois quarts de sa circonférence inférieure. Il est frangé sur ses bords, avec de petites taches ou lunules blanches qui alternent avec des stries rayonnées. On voit, au sommet de ce manteau, les impressions denticulées de la charnière, et en avant et en arrière, les muscles qui unissent les valves. Le pied est grand, robuste, sécuriforme, très recourbé en arrière, tranchant et denticulé sur son arête, de chaque côté de laquelle sont des laciniures, au tiers antérieur seulement. Il ne nous a pas paru se dilater comme dans les muscles. Les branchies sont grandes, libres, subtriangulaires, en pointe, reposant, de chaque côté de la racine du pied, leur doubles lamelles. Les palpes buccaux sont excessivement petits, réunis dans une partie de leur étendue. L'anüs est à l'extrémité d'un court pédicule. La disposition du manteau et le manque de tubes rapprochent ce mollusque de celui des *Nucules*, dont il diffère cependant par la disposition des branchies et la brièveté des appendices de la bouche.”

Description of Trigonia.

The mantle-lobes are rounded and plaited, to correspond with the ribs of the shell. The edges of the mantle are marked with white spots; posteriorly, opposite the anus they are provided with short convex appendages. The mantle-lobes are disunited throughout, not joining until they reach the upper surface of the posterior adductor, some distance above the anus.

The gills are somewhat triangular, extending backwards almost horizontally on each side of the visceral mass. Each gill is formed of three stems, fixed at one extremity, free and pointed at the other, and giving attachment throughout their whole length, on one side to depending filaments, which become shorter as they are more posterior.

* Vol. iii. p. 476, Mollusques, pl. 78. f. 5.

The filaments are formed of a tubular horny thread, supporting on one side a broad membranous fringe. I could perceive no trace of vessels in this fringe, but it appeared to be covered by an epithelium (ciliated?).

The mouth is placed at the anterior and superior part of the animal, between two thickish horizontal lips. The labial tentacles are two on each side, rather long, lanceolate, and slightly pectinated. The anus is placed posteriorly and superiorly between the gills, and just about the posterior adductor muscle.

The so-called "foot" is composed of two portions, an upper and quadrilateral (properly the abdomen), and a lower pointed part (the true foot), the two being set at right angles to one another.

The first portion is sharp-edged and slightly pectinated posteriorly, marked by a groove bounded by two folded lips anteriorly. The second portion is slightly pectinated along its lower edge, pointed anteriorly, prolonged behind into a curved process, where it joins the superior portion.

Visceral mass.—The mouth opens by a very short œsophagus into a wide pyriform stomach, surrounded by a dark dendritic liver. The stomach narrows into a long intestine, which descends for the whole length of the abdomen, and forms one or two loops in the substance of the generative gland; then passes up again above the stomach, penetrates the heart, and passing between the two small lateral muscles of the foot, terminates in the anus.

BOTANICAL SOCIETY OF EDINBURGH.

December 13, 1849.—Dr. Lowe in the Chair.

The following communications were read:—

1. "On the Plants of the Valley of Fatana, Taheite," by Archibald Sibbald, M.D., R.N. The author gave a list of the species observed by him in the Valley of Fatana, in Taheite, with their native names, and remarks on their properties, and the uses to which they are applied by the inhabitants. The paper was accompanied by specimens of the "Tapa" cloth, and an account of the mode in which it is prepared from the bark of the bread-fruit-tree, *Artocarpus incisa*.

Mr. M'Nab exhibited a book containing specimens of native cloths collected during Captain Cook's voyages among the South Sea Islands.

2. "On some Scotch Freshwater Algæ," by Wyville T. C. Thomson, Esq. The author laid before the Meeting specimens of freshwater Algæ, collected during the past summer chiefly in the west of Scotland. Of the genus *Batrachospermum*, specimens of *B. atrum* were exhibited, of a very large size, found in Ayrshire during the month of October. Mr. Thomson remarked, that the supposed rarity of this species probably originated in its being sought for at the wrong season; he had found it sparingly during the early part of the summer attached to stones at the bottom of still, clear pools, the specimens being usually about an inch or an inch and a half high. When found in the end of autumn, however, the plants were free, floating on the surface of the water or attached to the ice. At this

time the specimens occupy, when laid out, a space from six to nine inches in diameter. Specimens were also exhibited of *B. moniliforme*, *stagnale* and *proliferum* from Ayrshire, the latter two being considered by Mr. Thomson as forms of the first depending on situation.

Mr. Thomson corroborated Mr. Berkeley's observations on the capsular fructification of *Chaetophora tuberculosa*, and exhibited a series of specimens connecting this species with *C. elegans*, of which he considered it the mature state, enlarging, softening, and breaking down, by the imbibition of water, for the escape of the spores from its ripe capsules. He exhibited a number of other beautiful specimens of freshwater Algæ.

3. "On peculiar Cells found in the Style and other parts of certain species of *Grevillea*, *Banksia*, *Manglesia*, and other *Proteaceæ*," by Spencer Cobbold, Esq. The author mentioned the occurrence, in the stem, leaves, floral envelopes, and fruit of various *Proteaceæ*, of certain peculiar cells, which in their simplest stage of development are transparent, fusiform, and of variable size, but generally much larger than the cells composing all other tissues of the same organ, and containing in their interior cellules of various colours, and a nucleus attached to or bulging out from the cell-wall. He considered that whatever be the function of these bodies, there is one special end to which they seem destined, viz. the formation of peltate hairs, which occur in great abundance over nearly all the organs of some of the species examined.

4. "On the Plants used for forming Hedges and Fences in Southern India," by H. Cleghorn, M.D., H.E.I.C.S. The author adverted to the remarkable prevalence of thorny shrubs and prickly plants in the flora of the Peninsula; where they are a continual annoyance to the traveller, and a frequent cause of admission into hospital—especially during the hotter months, when the leaves having dropped off, the spines are left bare and exposed. Notwithstanding the abundant provision for the extensive diffusion of hedges and fences, it is universally admitted that the bleak and barren tracts stand pre-eminently in need of these appliances, for the development and preservation of their agricultural resources, which suffer from the depredations of wild animals and stray cattle.

He exhibited drawings of *Opuntia Dillenii*, Haw., prickly pear; *Agave cantula*, Rox., aloë (with a sample of its fibres used for cordage); *Euphorbia tirucalli*, L., milk bush, and *E. antiquorum*, L. These, with the bamboo, are commonly employed in the enclosures of Southern India.

Cæsalpinia sepiaria, Rox., Mysore thorn, is invested with historical interest, Hyder Ali having encircled the village fortifications with this plant. The fences are handsome and almost impenetrable. This, with *Pterolobium lacerans*, R. Br., and other species, seems worthy of general introduction, and grows rapidly from seeds. *Capparis sepiaria*, L., forms an excellent hedge round Shikarpoor. *Trophis aspera*, Retz., is well adapted for the same purpose from its ramous branches and rigid character. *Acacia latronum*, Willd., was also pointed out, aptly designated by Willdenow *Frutex horridissimus*.

This paper will appear in the 'Annals of Natural History' and in the Transactions of the Society.

Dr. Cleghorn exhibited the fruit of *Aristolochia indica*, L., and the strange-looking tuberculated pod of *Bignonia xylocarpa*, Rox., three feet long—about the size of a walking-stick. When pendulous from the tree, it is a conspicuous object on the Malabar Ghauts.

5. "On a supposed new species of *Glyceria*," by Frederick Townsend, B.A. (See p. 104.)

The following office-bearers were elected for the ensuing year:—

President.—Professor Fleming.

Vice-Presidents.—Dr. Neill, Dr. Lowe, Professor Balfour, Dr. Seller.

Councillors.—Mr. Lawson, jun. ; Mr. Wm. Ivory, W.S. ; Dr. Parnell ; Mr. James Cunningham, W.S. ; Mr. J. T. Syme ; Professor Christison ; Professor Goodsir ; Mr. Charles Murchison ; Mr. J. S. Sanderson ; Mr. Benjamin Carrington.

Treasurer.—Mr. Brand.

Honorary Secretary.—Dr. Greville.

Foreign Secretary.—Dr. Douglas Maclagan.

Assistant Secretary.—Mr. Evans.

Curator of Museum.—Mr. Wyville T. C. Thomson.

Artist.—Mr. J. M'Nab.

Assistant Curator.—Mr. G. Lawson.

Jan. 10, 1850.—Professor Fleming, President, in the Chair.

Many donations were announced.

The following papers were read:—

1. "On the British species of *Chara*," by Charles C. Babington, M.A., F.L.S. &c. (See p. 81.)

2. "On the Watery Secretion of the Ice-plant, *Mesembryanthemum crystallinum*, L.," by Dr. Augustus Voelcker, Professor of Chemistry in the Royal Agricultural College, Cirencester. (This paper will appear in our next Number.)

3. "List of Plants found in the Island of Rathlin," by Miss C. Gage. The picturesque and interesting island of Rathlin or Raghery is situated on the coast of Antrim, being three miles distant from the promontory of Fair Head, on the mainland, and nearly five and a half miles from Ballycastle. In its geological formation it is basaltic, and presents fine cliffs, with some remarkable columns, more especially at Doon point on the south-eastern side. Among the plants noticed were the following:—*Galium pusillum*, *Anagallis tenella*, *Beta maritima*, *Cuscuta epilinum*, *Helosciadium nodiflorum*, *Cicuta virosa*, *Conium maculatum*, *Ananthe fistulosa*, *Smyrniolum Olusatrum*, *Scilla verna*, *Alisma ranunculoides*, *Elatine hexandra*, *Sedum reflexum*, *S. Rhoioides*, *Nymphaea alba*, *Nuphar lutea*, *Ranunculus hirsutus*, *Orobanche major*, *Draba muralis*, *Crambe maritima*, *Brassica oleracea*, *Raphanus maritimus*, *Lavatera arborea*, *Ulex nanus* (introduced), *Hypericum Androsæmum*; *Artemisia maritima*, *Inula Helenium*, *I. dysenterica*, *Pyrethrum maritimum*, *Malaxis paludosa*, *Littorella*

lacustris, *Eriocaulon septangulare*, *Ceratophyllum demersum*, and *Asplenium marinum*. From Miss Gage's list there would appear to be nearly 300 phanerogamous plants and ferns in the island.

Dr. Cleghorn stated that in August last he visited the Giant's Causeway and Isle of Rathlin in company with Dr. Merriman of Kensington and Mr. T. Merriman. They traversed a considerable portion of the island, observing many of the plants mentioned in the list, *Ulex nanus* being in profusion. *Sedum reflexum* occurs at Fair Head and in various localities along the Antrim cliffs. Whoever has experienced the strong currents or boisterous gales in these seas, will not hesitate to attribute the dissemination of species to their agency—along with the transport of innumerable migratory sea birds which whiten the cliff. The party received much kindness under the hospitable roof of the Rev. R. Gage.

Dr. Cleghorn exhibited the large ligneous fruit of *Hydnocarpus inebrians* (Vahl), which is used for poisoning fish in Malabar. Lamp oil is extracted from the seeds. He showed a drawing of *Erythropsis Roxburghiana* (Lindl.), an extremely handsome tree. The rich scarlet panicles of flowers burst forth after the monsoon, long before the foliage appears. Also the fruit of *Sterculia fetida* (Linn.), a common forest tree of stately size, widely diffused: the flowers yield an offensive odour, indicating to the traveller its immediate vicinity when riding through the jungle. The seeds are roasted and eaten like chestnuts. Dr. Cleghorn adverted to the difficulty of studying timber trees in the primæval forests, and stated it to be one of the most difficult departments of tropical botany.

Dr. Balfour read a letter which he had received from Professor Fries, dated Upsal, 1st November 1849. In this letter, Fries thanks the Society for the specimens of *Hieracia* which had been transmitted to him, and states that he had found them useful in compiling his recent work, 'Symbolæ ad Historiam Hieraciorum.' He promises to send some critical species in return.

Mr. Wyville T. C. Thomson read a letter from Mr. Westwood, Dollar, mentioning the discovery of *Potentilla tridentata* on Ben Wyvis several years ago. No specimens were sent, and some doubts were expressed as to the discovery.

Mr. Thomson also exhibited a specimen of *Salix retusa* which had been gathered by a friend of his on Ben Lawers.

Mr. M'Nab exhibited a specimen of the spathe and flowering spadix of *Euterpe montana* (mountain cabbage palm), and noticed the rapidity with which the branched spadix is developed. It would appear that the branches of the spadix are confined by the spathe until their resiliency bursts it, and the branches at once spread out at right angles from the common rachis. Although this palm has flowered frequently of late in the Palm House of the Botanic Garden, it has not produced perfect fruit as it used to do many years ago.

Dr. Balfour exhibited a specimen of wood hyacinth (*Agraphis nutans*), gathered by Mr. John Jeffrey, Edinburgh Botanic Garden, near Lochar, in Fife, in which all the bracts were converted into green leaves, many of them four to five inches long and one-eighth broad, giving

the plant a very peculiar aspect. This variety was originally introduced from Inverness-shire, and has been cultivated many years in the Garden at Lochar.

A letter was read from Mr. Hailstone, mentioning that he had gathered specimens of *Cynosurus echinatus* near Thorpe Arch, York-shire.

Mr. J. T. Syme exhibited a specimen of *Melilotus arvensis* picked between Inverkeithing and Limekilns. This plant has been observed in several spots near Edinburgh, more especially at St. David's and other parts of Fife.

Dr. Balfour exhibited a specimen of *Eriophorum alpinum* picked by him in Durness, Sutherlandshire, 21st August 1827, when accompanying the late Professor Graham on a botanical trip. Dr. Balfour stated that, at that time, he had just commenced the study of botany, and that the plant was put by him among specimens of *Scirpus cæspitosus*.

IPSWICH MUSEUM.

“On the Gigantic Birds of New Zealand, and on the Geographical Distribution of Animals:” the substance of a Lecture delivered at the Anniversary Meeting of the Ipswich Museum, by Professor Owen.

After some appropriate introductory remarks, Professor Owen entered upon the subject of his discourse by narrating the circumstances which first brought to his knowledge the fact of the existence, at some former period, if not at the present time, of gigantic birds, incapable of flight, in the islands of New Zealand. He exhibited a single fragment of bone, which had been submitted to him in 1839, which was affirmed to have been found in New Zealand, and he defined the steps in the series of comparisons which led to the conclusion that it must have formed part of a bird as large as the Ostrich, but of a heavier and less agile species. He next gave an account of the different species of wingless or struthious birds which were known to science at that time; he more especially described the Apteryx of New Zealand, and the Dodo of the Mauritius; and pointed out the remarkable character of their geographical position. The progressive steps in the restoration of the probably extinct wingless birds of New Zealand were then explained and illustrated by the plates of the works which Professor Owen had published on the subject, and by enlarged diagrams. The importance attached to the first fragment of bone stimulating the colonists to special researches, the remains of these extraordinary birds, which had escaped the notice of Banks and Solander, and successive naturalists, up to the year 1839, were soon obtained, and in unexpected abundance and perfection. The bones of the leg were first transmitted in October 1843, by the Rev. Mr. Williams, a church missionary, now Archdeacon of the Diocese of New Zealand. Casts and figures of some of the most remarkable of these bones were exhibited and explained. They indicated at least five distinct species, varying in height from three feet to eleven feet. The average stature of the Ostrich is six feet. The absence of air-cells in these bones, and their dense structure, confirmed the original